SCIENCE & GOVERNMENT REPORT

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New White House Science Office: Small, in All Ways

The White House Office of Science and Technology Policy (OSTP) that President Ford proposes to establish is a substantially pared-down version of the setup that was recommended by Vice President Rockefeller, who, at the President's request, studied various plans for restoring science advice to the Executive Office staff (SGR Vol. V, No. 11). The result is a scheme for a fairly modest operation, with limited staff resources and jurisdiction.

Coming to the task with a long-established record of reliance on professional expertise, Rockefeller and his staff associates essentially accepted the case of the scientific leaders who argued for the creation of a strong scientific presence at the Presidential level.

The President's own staff people, however, viewed the Rockefeller recommendations as a gambit for enlarging the Vice President's control over scarce White House job slots, and for expanding his influence through dominance of a subject area which the Ford people neither know nor care about very much. Throughout the months of deliberations on the subject of undoing Nixon's dismantling of the Office of Science and Technology, the attitude of the President's associates was that the need to be concerned about science advice had been foisted on them by a coalition of bothersome scientists and Congressional meddlers. Left to themselves, they would have been wholly content to carry on with the arrangement under which the Director of the National Science Foundation doubles as Science Adviser to the President whenever called upon — which hasn't been often.

In describing the President's plan for OSTP during two Congressional appearances this month, Rockefeller carefully worded his prepared statements so as to sidestep the question of whether the plan represented his own ideas on the scale and authority of the proposed office. Thus, he told the House Science and Technology Committee on June 10, "In December of 1974, the President asked me to examine whether a science advisory organization in the White House would strengthen the Presidential staff mechanism. After several months of study, I recommended creation of an Office of Science and Technology Policy. The President approved the recommendation and has proposed appropriate legislation. I would now like to review for you the principal elements of the Administration's proposal."

At that hearing, and a few days earlier at a meeting in the Senate presided over by Senator Kennedy, Rockefeller provided details. OSTP will consist of a director, deputy director and a professional staff of about 15. Its annual budget will be $1 million to $1.5 million. And, like its predecessor organization, it will employ ad hoc panels to conduct studies. Nothing was said, however, about a restoration of anything resembling the President's Science Advisory Committee, that commuting body of senior scientists and engineers which was a powerful component of the oldtime science advisory apparatus.

What the Vice President said about OSTP's jurisdiction however, makes it plain that the proposed office is not intended to be a powerful presence in the Executive Office hierarchy.

It was explained by the Vice President in a prepared statement that the office is "To be available for participation in broad reviews of policies and programs of the departments and agencies having technical responsibilities and thus to assist in the formulation of national policy on technical and scientific matters.

"This is not meant to imply or confer, however," he continued, "power or control over the scientific and technical budgets or programs of such departments and agencies."

With those specifications, the Administration disposed of a proposal — advanced most strongly by Nixon's last science adviser, Edward E. David Jr. — that a resurrected White House science office be given "authorization" power over all major federal research and development programs. As

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In Brief

The Defense Department's basic research budget, which has remained essentially level for several years, has benefited from Congressional fears of appearing dovish following the Vietnam debacle. Normally an object for serious pruning, the military sciences request emerged from committee minus only $17 million in the House and $8 million in the Senate, which is small stuff in view of the $488 million that was sought.

NSF is looking to recruit US scientists and engineers to work for 1-2 years on the development of scientific and technical programs in Iran and Saudi Arabia. The Iranian program covers oceanography, radio astronomy, energy, environment, and population. In Saudi Arabia, NSF is assisting in the development of a National Center for Science and Technology, which will include national research centers in arid land research, desalination, and water use. For further information, contact R.R. Ronkin, Office of International Programs, NSF, 1800 G St. NW., Washington, DC 20550.

The American Cancer Society has responded with pique to a suggestion that it ban smoking in its offices. The suggestion, by John Banzhaf and Glen Goldberg, officers of Action on Smoking and Health, provoked a press release which stated, "ACS is not authoritarian in its procedures and will not fire those of its employees who have been unable to quit smoking." The statement added that "smokers are not our enemies, they are the people we want to help quit smoking."

Kennedy Outmaneuvers Teague in Unveiling Advisory Plan

Capitol Hill's fine-honed talent for glory seeking has evidenced itself in a House-Senate scramble to provide a stage for the debut of President Ford's plan to re-establish a White House science office.

Directly involved were two champions of the proposal: Senator Kennedy, whose S. 32, the National Science Policy and Priorities Act (SGR Vol. V, No. 2), proposes a Council of Science and Technology Advisers in the White House; and Rep. Olin E. Teague (D-Texas), whose HR 4461, the National Science Policy and Organization Act (SGR Vol. V, No. 6), calls for creation of a Council of Advisers on Science and Technology.

The Science and Technology Committee, which Teague chairs, had been cautiously birddogging the White House advisory issue for many years, but all along took the position that it would not make a specific proposal until the President indicated his preference. However, when Kennedy showed no such timidity, and introduced a bill calling for a Council, Teague soon followed with his bill—and the race was on.

On May 22, when Kennedy was out of the country, the President summoned a group of Representatives and Senators to the White House to announce that it had been decided to resurrect the science office, but with a single adviser in charge. Teague then announced that his Committee would hold hearings June 10, at which time the Administration would present legislation on the subject. To emphasize the importance of the occasion, Teague also announced that the presentation would be made by Vice President Rockefeller, which involved something a touch historic, since Vice Presidents don't often testify.

Kennedy's staff people, being a nimble bunch, did not settle for the House Committee serving as the unveiling site for a scheme that he and they had pushed as hard as anyone. On June 5, they suddenly announced that the following morning, Vice President Rockefeller would take part in a "conference" in the Senate, at which time he would provide details of the President's plan. To keep the precedents and the Constitutional lines clear, it was stated that the Vice President was not appearing as a witness, nor was the proceeding properly a hearing.

Whatever it was that took place, Kennedy managed to bring in a fair number of his Senatorial colleagues, including Senators Goldwater, Javits, Tunney, and Moss—which is both idealogically and numerically a pretty good turnout for the harried Senate.

Playing to an overflow crowd drawn by the Kennedy-Rockefeller glamor (with an unexpected bonus of Joan Kennedy's presence), the Senators and the Vice President uttered more kindnesses about science and technology than have been heard on Capitol Hill in a decade. The shame of it all is that someone didn't have an R&D supplemental bill all drawn up to push through on the tide of rhetorical enthusiasm.

For purposes of glory, however, the proceedings were a washout. The vagaries of the news business being what they are, nary a word of the proceedings appeared the next day in either the *Washington Post* or the *New York Times*, which, in the curious metaphysics of political reality, means the session might just as well not have taken place.

ADVICE *(continued from page 1)*

envisaged by David, the office would have power to say yes or no to big-spending ventures, and thus could function as a real orchestrator of the federal R&D effort, rather than as one of many advisers to the Office of Management and Budget.

As for relations with OMB and the other two power centers in the White House, the Domestic Council and the National Security Council, the authority of the office was carefully hedged in Rockefeller's statement. Its role in regard to these bodies, he explained, will be "To assist, where mutually appropriate . . . in reviewing department and agency programs that have technical and scientific content."

That statement cleared up the question of whether OSTP will have any voice on defense-related R&D: It will, but only where "mutually appropriate," which, of course, can mean anything that the other side of the mutuality deems desirable.

Since studies are the main business of an organization such as the proposed OSTP, it is also worth noting that the Rockefeller statement specifies that the office is "To have a modest capacity to initiate analyses and studies in support of the ad hoc panels. These analyses and studies would be performed in universities, private industry or federally supported institutions."

There is nothing to preclude eventually going above that stated first-year budget ceiling of $1.5 million, but when that relatively modest amount is spread among a director, deputy director, 15 professionals, clerical staff, and the costs of ad hoc panels, there will not be much left for buying studies. The Congressional counterpart to OSTP is the Office of Technology Assessment, which has a current annual budget of $4.7 million and a professional staff of about 26, plus 10 on temporary assignment from other organizations. OTA farms out most of its studies, and it is not unusual for individual contracts to amount to several hundred thousand dollars.

The bill that the Administration has submitted for establishing OSTP was delivered to the House Science and Technology Committee the evening before Rockefeller appeared as the leadoff participant for three days of hearings. It showed signs of hasty composition, for though Rockefeller said that it was the President's desire to have the OSTP director confirmed by the Senate, no such provision appeared in the text. Rockefeller offered no explanation for this omission, apart from wisecracking, in an apparent reference to the White House, "You never know what goes on down there."

He did state, however, that though the President favored Senatorial confirmation, it would be with the understanding that the OSTP director could not be summoned to Congress

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ERDA Asks Academy to Study Nuclear Needs

In the midst of a spate of rumors that the Administration is having second thoughts about the top priority accorded the liquid metal fast breeder reactor (LMFBR), comes news that the National Academy of Sciences has been asked to prepare a thorough assessment of the role that nuclear power should play in the future energy supply picture.

The study, which will formally be announced by the Academy when the contract is signed with the Energy Research and Development Administration (ERDA) and a committee is appointed, is likely to be a boon to the LMFBR's opponents in Congress. Although ERDA officials publicly maintain that the study in no way indicates that they are looking for a delay in the project, critics of the breeder program are gearing up for an assault on the LMFBR authorizations when they come up for a vote in the next few weeks, and they are sure to point out that the expenditures should be held up until the Academy's verdict is in.

The request to the Academy to study the potential for nuclear power may well be designed to head off public opposition to a controversial program, since ERDA officials are now in a position to respond to criticisms by pointing out that the program is being reviewed by the nation's most prestigious scientific body. But the Academy's broad assignment gives it a chance to examine the entire basis for an important national policy. It is expected to take between 18 and 24 months to complete the assessment.

Another immediate threat to the LMFBR program on Capitol Hill will come in the form of an amendment to the ERDA authorization bill proposed last week by Senator John Tunney (D-Calif.). Tunney, a freshman member of the Joint Committee on Atomic Energy, announced that he will seek to delete funds from the bill for the LMFBR demonstration plant, pending a year-long study of the LMFBR program by the Office of Technology Assessment.

Though anti-nuclear sentiments appear to have gained a foothold in Congress recently, there has been no vote so far to test the strength of the sentiment. The ERDA authorization bill is likely to be the first such test.

As for the alleged slackening of interest within the Administration for the LMFBR program, the basis for that suggestion stems from a *Wall Street Journal* report that ERDA Administrator Robert C. Seamans Jr. will ask Congress for a reduction in funds for the LMFBR demonstration plant in FY 1976, because the construction schedule has slipped. Ground breaking for the plant was due to begin near Oak Ridge, Tennessee, late this year, but it may now be delayed until late in 1976.

Thomas Nemzek, director of ERDA's Division of Reactor Research and Development, told a House subcommittee last week that the *Wall Street Journal* article was essentially correct, though he said that it should not be interpreted as an indication that the Administration's support for the LMFBR has slackened.

But, during press conferences in Washington last week given by Rogers C.B. Morton, Ford's new Commerce Secretary, and Federal Energy Administrator Frank Zarb, it was disclosed that a meeting of top energy officials at Camp David the previous weekend had reached the conclusion that the LMFBR program could be slowed down a little.

The savings in FY 1976 funds are likely to be transferred into R&D on reactor safety, safeguards and waste disposal, but a final announcement will not be made until June 30, when Seamans is required by law to present Congress with a national plan for energy R&D.

ADVICE *(continued from page 2)*

to discuss his activities. The reason for this, Rockefeller explained, was that such Congressional appearances might create conflicts between the Director and the R&D officials of various agencies and departments.

The Administration bill made no reference to another item in the Vice President's prepared statement, namely, that OSTP's panels should "be exempt from the Federal Advisory Committee Act."

It is doubtful that Congress will go for that.

Also doubtful, in view of the grudging welcome that the Ford Administration is according the idea of on-board science advice at the White House, is the question of who in the world would want to be the Presidential science adviser under the aforementioned groundrules.

Several names are being bandied about in Washington — among them NSF Director H. Guyford Stever, Edward Teller, and former Pentagon research chief John Foster. But with a long route to be covered before Congress has finally acted on the legislation, the selection of an appointee is probably far off.

As noted here last time, the return of science to the White House will first take on significance after the 1976 election. —DSG

Adviser: Limited Biomedical Role?

If tradition holds, the reborn White House science office is likely to have little influence over biomedical research.

The reason is two fold: First, starting with its various predecessors, dating back to the Science Advisory Committee in 1951, White House science advisers have been drawn from the physical sciences, and have mainly concerned themselves with priority problems related to big-science ventures, of which there are relatively few in the biomedical field.

But even more important, the power centers of biomedical politics tend to be concentrated in Congress, the National Institutes of Health, the medical schools, and the voluntary "disease-of-the-month" organizations. In recent years, the Office of Management and Budget and the strengthened office of HEW's Assistant Secretary of Health have joined in, but White House science advisers either stayed away from biomedical research issues or, when they became involved, came to realize that their influence was relatively small.

National Academy of Sciences Scrutinized in New Book. . .

The popular image of the National Academy of Sciences as a provider of far-sighted, impartial advice to the federal government on major national issues takes a severe battering in an important book published last week.

Written by Philip M. Boffey, under the sponsorship of Ralph Nader's Center for the Study of Responsive Law, the book (*The Brain Bank of America,* McGraw-Hill, $10.95) is an even-handed, meticulous analysis of the Academy's role in several important national science policy issues, including radioactive waste disposal, the SST debate, regulation of food additives and pesticides, use of herbicides in Vietnam, and the hazards of airborne lead.

The theme which emerges from those case studies, Boffey concludes, is that "the Academy's advisory reports often fall short of the very high quality one would expect from the nation's pre-eminent scientific organization; many, in fact, are mediocre or flawed by bias or subservience to the funding agencies."

Moreover, Boffey's analyses have brought out the plain fact that the Academy rarely takes the lead in public debate on controversial matters involving science and technology. Rather, it is left to others to sound warnings and raise the issues, while the Academy is frequently brought in for advice at a late stage and then in such a way that "it has often allowed itself to be used as a shield for those intent upon preserving business-as-usual."

HANDLER: "A CAREFUL ANALYSIS. . ."

Boffey's style is that of an investigative reporter — he was formerly with *Science,* the *Wall Street Journal* and *SGR* — and he has done a solid job in cutting through the layers of secrecy that have surrounded the Academy's government advisory work. The Academy's leadership certainly cannot lightly brush off his charges, for they are carefully documented through hundreds of interviews conducted over the past four years, and through material he has unearthed which has not previously seen the light of day.

A request for an interview with Academy President Philip Handler to discuss the book was denied with the amazing admission that he had not read all of it. But Handler felt no such reticence in describing the book to the Academy's members during the organization's annual meeting in April.

Calling it "a careful analysis of our defects," Handler suggested that "the flaws detected by and large, it seems to me, are relatively minor, albeit real. And I think that we have erected arrangements such that most of those are unlikely to recur."

FINANCIAL DEPENDENCE

But, though the Academy has, indeed, recently moved to correct some of the more glaring faults in its operations, it has done little to correct what Boffey perceives as its major weakness — its financial dependence on the federal government for support of its sprawling bureaucracy.

The Academy now has a staff of more than 1000 to support, and about 80 per cent of its operating budget is provided by the federal government. In that situation, it is too easy for government agencies which enter into contracts with the Academy for advice to manipulate the organization for their own ends.

One consequence of what Boffey calls this "servant-master relationship" between the government and the Academy is a tendency for Academy committees to mute their criticisms of government policies in order not to lose future government contracts. A particularly glaring example is a sordid episode which ocurred in the late 1960s over the Academy's advice to the AEC on radioactive waste disposal.

An unusually independent Academy committee prepared reports during the early 1960s which were critical of the AEC's waste management policies, and which suggested several areas of research to improve them. Then, in 1966, the committee turned in a report which Boffey says "contained the harshest criticisms yet leveled at the AEC's waste management program."

REPORT SUPPRESSED

The AEC's response was to suppress the report, and to inform the Academy that its advice on waste management was no longer needed and that the contract with the committee would be cut off the following year. What did the Academy's leadership do to prevent the Academy's advice from being ignored? For a start, it tacitly acquiesced in the report's burial by doing little to bring it to public attention. Then, at the AEC's insistence, it disbanded the offending committee and replaced it with one "loaded with scientists who had close ties to the AEC or its major contractors." Although Boffey says that the new committee "has not been a rubber stamp for the AEC," its reports "have tended to be supportive of AEC plans."

Another result of the Academy's subservience to the government is that it can sometimes be used to head off public opposition to controversial programs. Such seems to have been the case with the Academy's early involvement in the SST debate. Although the organization played no official role in the crucial decisions leading up to President Kennedy's 1963 announcement that construction of an SST would be a major national goal, the Academy was quickly rushed in when the Federal Aviation Administration's sonic boom tests in Oklahoma ran into spirited public opposition. The Academy accepted a rather narrowly defined study of the tests, and FAA officials lost no time in announcing that the matter had been turned over to the prestigious Academy for study.

Boffey accepts that such tactics are "not necessarily reprehensible if the study group does a good job," but in this case the Academy committee "showed a disquieting tendency to

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. . .Recent Reforms Fail to Touch Some Major Flaws

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place itself on the FAA's side of the controversy rather than act as an independent source of advice." It even suggested that the FAA should conduct a public relations effort to help blunt public opposition to the tests, and a later report was so poor that 189 Academy members signed a petition asking for it to be publicly corrected.

INVOKING PRESTIGE

Boffey also suggests that the Academy's prestige is sometimes invoked to bolster potentially controversial decisions. In 1969, for example, when reports first surfaced concerning the alleged carcinogenicity of cyclamates, the Academy, albeit reluctantly, agreed to look at the data, and a committee conducted a one-day review of the matter. That was sufficient for Surgeon General Jesse Steinfeld to announce to a press conference that "after a thorough review" the Academy had agreed that cyclamates should be removed from the list of food additives for general use.

INDUSTRY PRESSURE

Then there are charges that the Academy is frequently subject to pressure from business and industry, while non-establishment types such as environmentalists and public interest groups scarcely get a look in. Some of the specific instances, carefully documented in Boffey's book, have appeared in the press before, but his case studies document a measure of corporate bias in the workings of some committees studying food safety and the hazards of overuse of pesticides.

There are some glaring cases, such as the fact that a scientist working for a corporation manufacturing lead additives for gasoline was allowed to draft key chapters of a report on the health hazards of airborne lead, and the instance when some members of a committee studying the hazards of monosodium glutamate in baby foods were receiving research grants from the International Minerals and Chemical Corporation, a major manufacturer of MSG, and Gerber Products, a major user of MSG.

Boffey nevertheless acknowledges that in spite of the defects he has unearthed, the Academy has produced some reports of "outstanding quality," and it has recently put some of its operations in better order. Its operating bureaucracy has recently been reorganized, all unclassified Academy reports are supposedly available now for public inspection, all reports issued in the Academy's name are reviewed by a committee of Academy members for accuracy and hidden bias, and attempts are made to screen committee members for possible sources of bias.

But Boffey says that the reforms don't attack some of the major flaws in the Academy's operations, and he offers a prescription of his own (see box).

ILLSUION OF OBJECTIVITY

The underlying theme in Boffey's disclosures is summed up in his preface: "There are relatively few public policy questions whose answers are purely technical. In almost all cases, an element of informed judgment is required, and what comes out strutting as 'objective' wisdom is actually the subjective opinion of those who prepared the advice . . . the problems we highlight in this book are by no means unique to the National Academy of Sciences. They exist in even more virulent form throughout thousands of established organizations, advisory groups and institutions that affect our lives." —CN

Rx for NAS: Serve Public, Not the Buyers

Philip Boffey closes his analysis of the workings of the National Academy of Sciences with a prescription for that venerable institution to perform its government advisory functions "as if it were representing the public rather than offering consulting services to a particular agency."

For a start, Boffey suggests that Academy committee meetings should be opened up to the public. The statements submitted by committee members detailing potential sources of bias, and the reports of internal Academy review committees, should also be published. There should be a greater effort to solicit input from environmentalist organizations and public interest groups, and the Academy should announce each task it accepts.

Those reforms would be relatively easy to institute, and could be carried out immediately. But Boffey's most important suggestion would be a little harder for the Academy to swallow. He suggests that "the Academy's major weakness (is) its servant-master relationship to the government and industrial interests which provide financial support," and in order to eliminate that crippling weakness, it should reduce the scope of its activities to a level it could support from its own funds.

It should not take on every task that the government gives it, but should limit its activities to providing advice only on important matters which require high technical competence and independent judgment. Boffey notes that "the Academy likes to style itself a 'Supreme Court of Science,' but it seems to have forgotten that the actual Supreme Court turns down more cases than it hears."

Though there has been no official reaction from the Academy's leadership to Boffey's recommendations, Academy President Philip Handler told the Academy's members in April that he hopes many of them "will indeed find the opportunity to read at least the final chapter of Mr. Boffey's book," which contains the recommendations.

Congressional Library Offers New Look at US Spending

A new look at federal spending — from the perspective of outlays per capita — is contained in an unpublished study by the Congressional Research Service of the Library of Congress.

Like most statistical snapshots of complex matters, the study can serve many diverse political purposes. But, with that understood, it nevertheless throws a good deal of illumination on some massive shifts in the federal role in American life.

Thus, in comparing outlays per capita over period 1962-1976, the study reports that "human resources" spending — dominated by health programs — rose from $166 to $820. During the same period, spending per capita for defense rose from $272 to $436.

The category of "general science, space and technology" rose from $10 per capita in 1962 to a peak of $35 in 1966, the height of space spending; but since then it has declined to an estimated $20 per capita for 1976.

"Natural resources, environment and energy" rose from $13 in 1962 to an estimated $46 for 1976.

The study is not publicly available, but your Congressman can get you one. Ask for CRS publication HJ 2005 US, 75-60E, February 24, 1975.

News Notes: Stever, NBS

NSF Director H. Guyford Stever, whose parttime role as Presidential Science Adviser would be eliminated under President Ford's plan to acquire a fulltime adviser, has performed as a loyal teammate and praised the President's proposal.

But Stever, who has all along maintained that the current arrangement has worked quite well, has combined his statements of support with reminders that the scientific community hasn't fared badly during his tour as Science Adviser

In testifying June 10 on the President's plan at a hearing before the House Science and Technology Committee, Stever said, "During the past two years, as a result of strong Administration interest and Congressional support, total federal support for the conduct of R&D has increased from $17.4 billion to almost $22 billion in the bills now before Congress. This increase in federal support follows a period of seven years of little or no growth . . . In my view . . . despite the impact of inflation which has hit all sectors of our economy, our scientific enterprise remains generally healthy."

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The National Bureau of Standards' Office of Invention and Innovation, which traces back to World War II efforts to stimulate new technology, will go out of existence at the end of June. Some of its functions will be carried on by an NBS Office of Energy-Related Inventions, which Congress created last year to advise the Energy Research and Development Administration (ERDA) on providing support for energy-related inventions.

The soon-to-be-abolished office mainly functioned as a counseling center in support of the backyard inventor tradition. It had no money to award and though it was listed for a budget of $210,000 last year, most if not all of that money was actually used for other purposes.

With the passage of the Non-Nuclear Energy Act of 1974, which specified that NBS is to assist ERDA in determining financial support for smalltime inventors, the Office of Management and Budget (OMB) decreed the end of the oldtime office. At its height, it handled some 60,000 inquiries a year. Last year, the number was down to 3000. In OMB's view of the matter the task of counseling inventors can be handled by the Office of the Assistant Secretary of Commerce for Science and Technology.

In Print

Recent publications of more than routine interest.

Research Advances, 1975, intended for the lay public, slick-covered, illustrated, in magazine format, this publication is a product of NIH's anxiety to get its story across to the public. A well done job. (104 pages, single copies are free of charge from the Division of Scientific Reports, Building 1, Room 307, NIH, Bethesda, Md. 20014).

The International Bureau of Weights and Measures, 1875-1975, issued by the Commerce Department to mark the 100th anniversary of the signing of the Treaty of the Meter; contains a history of the International Bureau, which maintains the base standards of the metric system and coordinates international standards; mainly for the non-specialist, it also describes the development and use of standards. (250 pages, $3, Catalog No. C13.10:420, US Government Printing Office, Washington, DC 20402).

World Hunger, Approaches to Engineering Actions, report of a seminar last July by the Committee on Public Engineering Policy (COPEP), National Academy of Engineering. Participants included Robert C. Seamans Jr., then NAE president, now head of the Energy Research and Development Administration; Edward Wenk Jr., director, Program in Social Management of Technology, University of Washington; Senator Humphrey, Don Paarlberg, director, agricultural economics, US Department of Agriculture, and John Mellow, professor of agricultural economics, Cornell. (55 pages, available without charge, COPEP, National Academy of Engineering, 2101 Constitution Ave. N.W., Washington, DC 20418).

Research and Development in State Government Agencies, Fiscal 1972-73, an NSF report, covering expenditures by state agencies and state universities, which together account for 6.5 per cent of the national R&D effort. (NSF Publication 75-303, stock No. 038-000-00218, $1.80, US Government Printing Office, Washington, DC 20402).

GAO Assails Security in A-Weapon Shipments

While the debate about the adequacy of safeguards against the theft of plutonium and other potential atom bomb ingredients continues to rage, the General Accounting Office has investigated the precautions taken by the former Atomic Energy Commission and the Department of Defense while transporting nuclear warheads along public highways in the United States. It has turned up some disquieting facts.

Though the GAO report itself is classified, an unclassified digest released recently charges that the Army has shipped nuclear warheads from storage locations to missile launch sites in motor convoys using "commercial van-type trucks without armor or entry denial fixtures."

The Army, moreover, "did not use helicoptors to provide aerial reconnaissance and surveillance for its convoys," and it "did not have an adequate en route communication system to monitor progress." Finally, the GAO report charges that the Army "did not provide for a security alert team vehicle to follow its convoys and respond to emergencies."

Navy shipments of nuclear warheads "were also vulnerable to terrorist activity and susceptible to damage," GAO notes, but shipments by AEC and the Air Force were better protected.

The report states that "the Secretaries of the Army and Navy acknowledged that these observations were valid," but cited a "number of actions which should bring about needed improvements."

Though military spokesmen have pointed out in the past that the intricately coded firing mechanism on a nuclear warhead would present a difficult problem for a terrorist who manages to steal one, GAO said that it decided to look into tne adequacy of safequards against theft of ready-made nuclear weapons because of "the recent successes of terrorist organizations and the ability of such groups to strike almost anywhere in the world."

Letter to the Editor

Dear Sir:

On page 3 of your May 1 issue you state ". . . only about 20-25 percent of graduates emerging from the universities with freshly minted BS degrees in chemistry *and chemical engineering* will find jobs related to their education." This is totally false as regards chemical engineers, for just to the contrary, I have never known a time in which chemical engineering graduates were in more demand than right now. One of our graduating seniors (only four years of university-level education) was in my office recently to announce that he had been offered $17,000 per year as a starting salary. The going rate for beginning PhD graduates in chemical engineering is $20,000 per year, and there is more demand than there are candidates. There is in fact a very sharp distinction between the professional opportunities, both as to number and as to variety, that are available to chemical engineering graduates at all three academic levels as opposed to those available to graduates in chemistry.

Journalism in general in the United States is not particularly well-noted for its accuracy, but we must somehow expect more in science writing as well as science reporting. I am sure that this point was merely an oversight, perhaps in the haste of meeting a deadline, for in general I congratulate you on the quality of your newsletter. I have been a subscriber almost from its beginning.

Henry A. McGee, Jr.
Department Head, Chemical Engineering
Virginia Polytechnic Institute and State University

Dr. McGee's letter underlines a point that we have made before (SGR Vol. V, No. 8), that manpower forecasts often aren't much use as a basis for planning because they are not sufficiently broken down into separate disciplines, and their accuracy is often questionable. —EDITOR

Institute of Medicine Seeks New Head

The National Academy of Science's Institute of Medicine is once again looking for a president, following the departure of the post's second occupant in the 5-year history of the IoM.

Latest to leave is Donald S. Fredrickson, who after a year in the job, accepted the directorship of the National Institutes of Health. His predecessor, John R. Hogness, left to become president of the University of Washington.

Heading the search committee is Julius Richmond, vice president *pro tem.* The Institute Council will meet June 19, and if a candidate has been selected, the appointment process can be completed at the NAS Council meeting June 22.

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OTA Study Critical of Transportation Research

The Congressional Office of Technology Assessment (OTA) has presented the Senate Appropriations Committee with a report highly critical of government-sponsored R&D on personal rapid transit systems.

At the Committee's request, OTA concentrated on an assessment of so-called Automated Guideway Transit (AGT) — transportation systems in which unmanned vehicles run on fixed guideways, such as the trouble-plagued "people mover" being built on the Morgantown campus of the University of West Virginia. Other OTA studies of rapid transit systems are also in the works, but this one was produced on a crash timetable to assist the Committee in its deliberations on the Department of Transportation's FY 1976 budget request.

Noting that DoT's Urban Mass Transit Administration (UMTA) has spent $95 million for R&D on AGT systems since 1962, and is asking for $14 million in FY 1976, the OTA study suggests that "considering the substantial amounts expended since the establishment of UMTA, accomplishments in the form of fully developed systems in revenue service have been limited."

So far, no AGT systems are operating in cities — the few that are in service operate in special environments such as airports — but a few local governments, such as Minneapolis and Las Vegas, have recently shown an interest in the systems as an alternative to more conventional urban transit networks.

The OTA study faults UMTA for allocating too small a share of its budget to R&D — 2.1 per cent compared with a government average of 5.7 per cent — and it also points out that "R&D for urban mass transportation amounts to only about 7 per cent of all federally sponsored R&D for transportation, yet 76 per cent of all passenger trips are in urban areas."

In general, OTA believes that UMTA's R&D programs for new systems have "emphasized advancing the state of technology but have neglected near-term system improvements to perfect and apply simpler approaches to correct transit problems."

Noting that joint government-industry arrangements for development of rapid transit systems have been set up in Canada, France and Japan, the OTA study suggests that "better results might be achieved (in the United States) from cooperative arrangements between government and industry." In particular, the study points out that industry has so far pumped about $100 million into AGT R&D in the expectation of large market for AGT equipment, but since no such market has developed "it is unrealistic to expect that industry will make further substantial investments for product development and improvement."

The OTA study recommends four alternatives for the Appropriations Committee to consider in its deliberations on UMTA's FY 1976 budget. Two of them would reorient the budget request to give increased emphasis to the exploitation of existing technology and to social and economic studies of AGT systems — areas which, OTA says, have been relatively neglected.

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